

Abstract

Method of Heat Drilling Holes into Ice and Apparatus for Practicing the Method

- 5 The major field of application of drilling in ice is polar research with through-bores in floating ice for examining the lower surface of the ice, the water below it and the bottom of the sea. Melt drill heads or wash drill heads operating with hot water are used for heat drilling which, however, can only wash out bore hole diameters in the range of the diameter of the drill and. Therefore, rendering the
- 10 lowering and hoisting of drills and measuring apparatus very difficult. For forming uniform and large bore diameters the method in accordance with the invention, therefore, provides a combination of the melt drill and the wash drill, wash drilling taking place in the radial plane of the bore hole, and for this purpose uses a melt-wash drill head (1) which at its top is provided with a water
- 15 inlet (2), a hemispherical melt section (3) below and a narrow azimuthally circumferential annular gap (5) connected by large surfaces with the water inlet (2), through which gap (5) the hot water (4) is guided against the wall (7) of the bore hole and deflected upwardly so that a smooth surface (14) of the bore hole and a constant bore hole diameter (15) result. The melt-wash drill head (1)
- 20 closes a pilot bore hole (9) with a film (12) of melt water to prevent cold sea water from being sucked in at the end of the main bore hole (19).